Work Order ID 121261

121261

June-20-14 7:27:26 AM

Item ID: D412-664-443TRN **Accept** *N900040100* **Setup Start** *NS1*

Revision ID: **Stop** *NS2*

Item Name: Crosstube Turning Detail

Start Date: 6/20/14 **Start Qty:** 1.00 *1* **Cust Item ID:**

Required Date: 8/08/14 **Req'd Qty:** 1.00 *1* **Customer:**

Reference:

Run Start *NR1*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Stop** *NR2*

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr / **Revision Nbr**									
D412-664-443 / Rev A									
100		0.00							
100	MORI SEIKI CNC LATHE LARGE					1	0		
Mori Seiki	**Memo**	0.00							
Mori Seiki CNC Lathe Large	1-Cut tube on chop saw, leave extra mat'l for facing. 2-Face tube to length.								mm.L 14/06/24
110	QC1- Inspect dimensions to dimension sheet	0.00							
110						1	0		
QC	**Memo**	0.00							
Quality Control									mm.L 14/06/24

Work Order ID 121261

121261

June-20-14 7:27:26 AM

Item ID: D412-664-443TRN **Accept** *N9000040100* **Setup Start** *NS1*

Revision ID: **Stop** *NS2*

Item Name: Crosstube Turning Detail

Start Date: 6/20/14 **Start Qty:** 1.00 *1*

Required Date: 8/08/14 **Req'd Qty:** 1.00 *1*

Reference:

Cust Item ID:

Customer:

Run Start *NR1*

Stop *NR2*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120		0.00							
120	MORI SEIKI CNC LATHE LARGE					1	0		
Mori Seiki	**Memo**	0.00							
Mori Seiki CNC Lathe Large	1-Fill tube with sand & install plugs on both ends 2-Turn as per Folio FB216 3- File transition lines smooth. 4-Scribe part # as per Dwg D412-664-443 FOLIO REV: AA DWG REV: A								amm 14/06/25
130	QC1- Inspect dimensions to dimension sheet	0.00				1	0		
130									
QC	**Memo**	0.00							amm 14/06/28
Quality Control									
140	QC8- Inspect parts - second check	0.00							
140						JW	14-07-07		
QC	**Memo**	0.00							
Quality Control									

Item ID: D412-664-443TRN **Accept** *N900040100* **Setup Start** *NS1*
Revision ID: **Stop** *NS2*
Item Name: Crosstube Turning Detail
Start Date: 6/20/14 **Start Qty:** 1.00 *1*
Required Date: 8/08/14 **Req'd Qty:** 1.00 *1*
Reference:
Cust Item ID:
Customer:

Run Start *NR1*
Stop *NR2*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150		0.00							
150	Large Fab					DK	19/07/07		
Crosstubes	**Memo**	0.00							
Crosstubes	Grind machining marks smooth longitude way.								
180	QC15- Crosstube Dimensional Check	0.00							
180									
QC	**Memo**	0.00							
Quality Control									
190	Identify as per dwg & Stock Location: LG	0.00							
190	Packaging					JW	14-07-07		
Packaging	**Memo**	0.00							
Packaging	Identify and stock in kanban rack Location: _____								

N/A JW 14-07-07

Item ID: D412-664-443TRN
Revision ID:
Item Name: Crosstube Turning Detail

Accept *N900040100*

Setup Start *NS1*
Stop *NS2*

Start Date: 6/20/14 **Start Qty:** 1.00 *1*
Required Date: 8/08/14 **Req'd Qty:** 1.00 *1*
Reference:

Cust Item ID:
Customer:

Run Start *NR1*
Stop *NR2*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200	QC21- Final Inspection - Work Order Release	0.00							
200 QC Quality Control	**Memo**	0.00				MLJ	14-07-08		

14.7.7

Picklist Print

June-20-14 7:27:25 AM

Work Order ID: 121261 *121261*

Parent Item: D412-664-443TRN *D412-664-443TRN*

Parent Item Name: Crosstube Turning Detail

Start Date: 6/20/14 **Required Date:** 8/08/14

Start Qty: 1.00 **Required Qty:** 1.00

Comments: IPP REV:A NEW ISSUE 13-09-26 JLM VERIFIED BY:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6020-160		Manufactured	No				Each	19.0000		1			
D6020-160									**				
Crosstube Material													

Location	Loc Qty	Loc Code
BSKT	11	
98110	11	
prelim	8	
105163	8	

1 mm.L 14/06/23

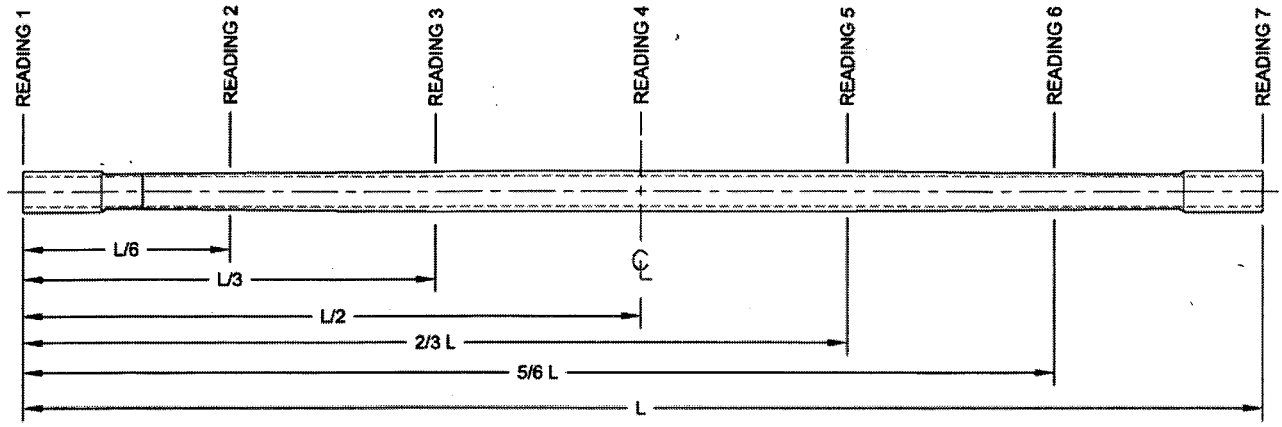
DART AEROSPACE LTD	Work Order:	12126
Description: Crosstube Assembly	Part Number:	
Inspection Dwg: Rev:		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A							
	7.98	± 0.060	7.98	✓		vern	CNC-08
	0.500	± 0.010	.500	✓		AG	
	2.990	± 0.005 ± 0.000	2.991	✓		mirc	CNC-04
	2.776	+ 0.005 - 0.000	2.778	✓		mirc	CNC-04
	2.776	+ 0.005 - 0.000	2.777	✓		↓	
	2.880	+ 0.005 - 0.000	2.882	✓		↓	
	2.990	+ 0.005 - 0.000	2.992	✓		↓	
	3.100	+ 0.005 - 0.000	3.102	✓		mirc	CNC-05
	3.250	+ 0.005 - 0.000	3.254	✓		mill	
SIDE B							
	7.98	± 0.060	7.98	✓		vern	CNC-08
	0.500	± 0.010	.500	✓		RG	
	2.990	± 0.005 ± 0.000	2.993	✓		mirc	CNC-04
				✓			
	2.776	± 0.005 - 0.000	2.779	✓		mirc	CNC-04
	2.776	± 0.005 - 0.000	2.781	✓		↓	
	2.880	+ 0.005 - 0.000	2.880	✓		↓	
	2.990	+ 0.005 - 0.000	2.993	✓		↓	
	3.100	± 0.005 ± 0.000	3.102	✓		mirc	CNC-05
	3.250	+ 0.005 - 0.000	3.254	✓		mill	
	130.10	± 0.060	130.090	✓		tape	LG-11

DART AEROSPACE LTD	Work Order:	12261
Description: Crosstube Assembly	Part Number:	
Inspection Dwg: **Rev:**		Page 2 of 2

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.300	.309	.306	.293	.016	
READING 2 L= 21.5	.188	.210	.203	.181	.029	
READING 3 L= 43.5	.303	.319	.322	.303	.019	
READING 4 L= 65	.423	.447	.438	.416	.031	
READING 5 L= 86.5	.306	.341	.323	.281	.063	
READING 6 L= 108.5	.195	.232	.203	.165	.067	
READING 7 L= 136.10	.298	.345	.319	.260	.085	

Calibration Result

Actual Block Thickness: .100 .506

Sitescan 250 Measured Thickness: .100 .500

Measured by:	MMC	Audited by:	JW	Preliminary Approval:	
Date:	14/02/01	Date:	14-07-07	Date:	

Rev	Date	Change	Revised by	Approved
B	10.04.14	Added preliminary approval	KJ	
C	12.06.01	Wall thickness form added	KJ	

Item	Qty -443	Part Number	Description
1	X	D412-664-443	**CROSSTUBE ASSEMBLY (412 HI AFT)**
2	1	D6020-132	CROSSTUBE MATERIAL (132" MIN. LENGTH)
3	2	D3595-063-530	RUBBER CUSHION
4	1	D4909-1	SUPPORT
5	2	D4910-1	CHAFING SHIELD
7	4	MS21920-26	CLAMP
8	2	MS21920-28	CLAMP
9	A/R	SCOTCH-WELD DP460	EPOXY ADHESIVE, 3M SCOTCH-WELD
10	A/R	PROSEAL 890	SEALANT

GENERAL NOTES:

1) MATERIAL: MANUFACTURED FROM D6020-132
   FINISHED LENGTH = 130.10±0.060 (BEFORE BENDING/TRIMMING)
2) FINISH: PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
   MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C6-2, HATCHED AREA)
   PAINT OUTSIDE PER DART QSI 005 4.2
   AFTER PAINTING, REMOVE MASKING AND APPLY MATTE CLEAR COAT PER DART QSI 005 4.2
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
4) UNITS: INCHES UNLESS OTHERWISE NOTED.
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
6) IDENTIFICATION: SCRIBE DART P/N "D412-664-443" AND B/N ON INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS)
7) WEIGHT: 90.2 lb AFTER MACHINING
   86.7 lb FINISHED WEIGHT
8) PART IS SYMMETRIC ABOUT CENTERLINE.
9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

BENDING

10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7% (BASED ON O.D.) IN LOWER HALF OF R35 BEND AND 6% (BASED ON O.D.) ON REMAINING TUBE.
11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038. TO BE PERFORMED AFTER FINAL POST-BEND GRINDING. ANY ADDITIONAL GRINDING REQUIRES ANOTHER LPI INSPECTION.

ASSEMBLY

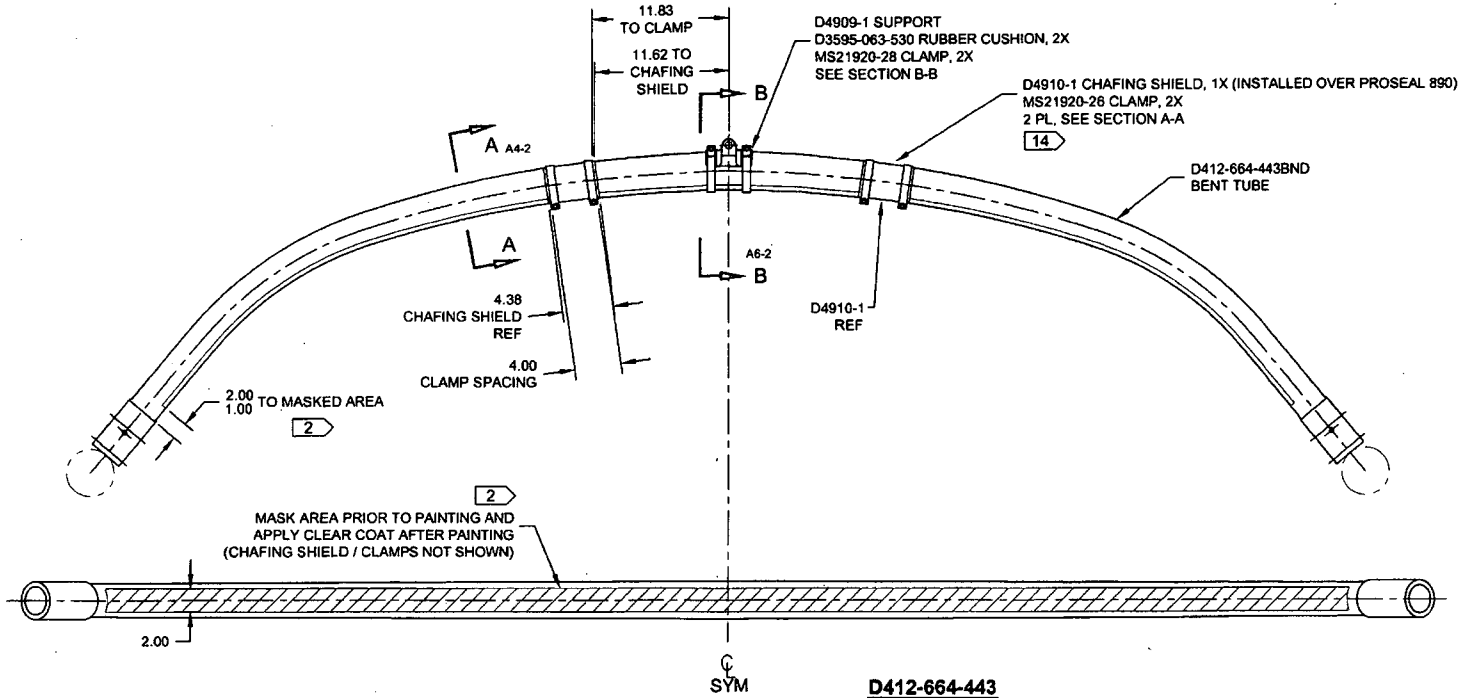
12) INSTALL D4909-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015.
13) INSTALL MS21920-28 CLAMPS WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D4909-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP OF CROSSTUBE SUPPORT.
14) IF NOT ALREADY PRESENT ON CHAFING SHIELD, APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D4910-1 CHAFING SHIELD AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D4910-1 CHAFING SHIELD ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.
15) TORQUE CLAMPS ON D4909-1 SUPPORT 80 TO 100 IN-LB. TORQUE CLAMPS ON D4910-1 CHAFING SHIELD 40 TO 50 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVES HAVE CURED FOR 24 HOURS.**

121261

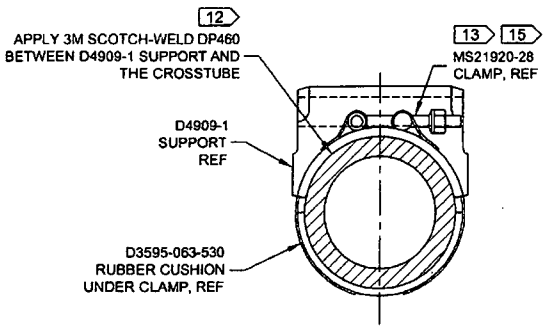
RELEASED
2014 -05- 26

REV.	DESCRIPTION	BY	DATE
A	NEW ISSUE	CP	14.04.01

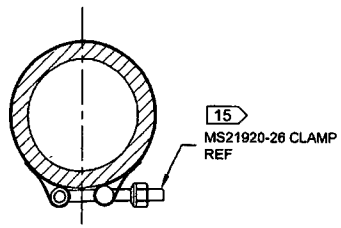
DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN			
CHECKED		DRAWING NO. D412-664-443	REV. A
MFG. APPR.			SHEET 1 OF 4
APPROVED		TITLE CROSSTUBE ASSY (412 HI AFT)	SCALE NTS
DE APPR.			
DATE 14.04.01			



D412-664-443
ASSEMBLY DETAIL



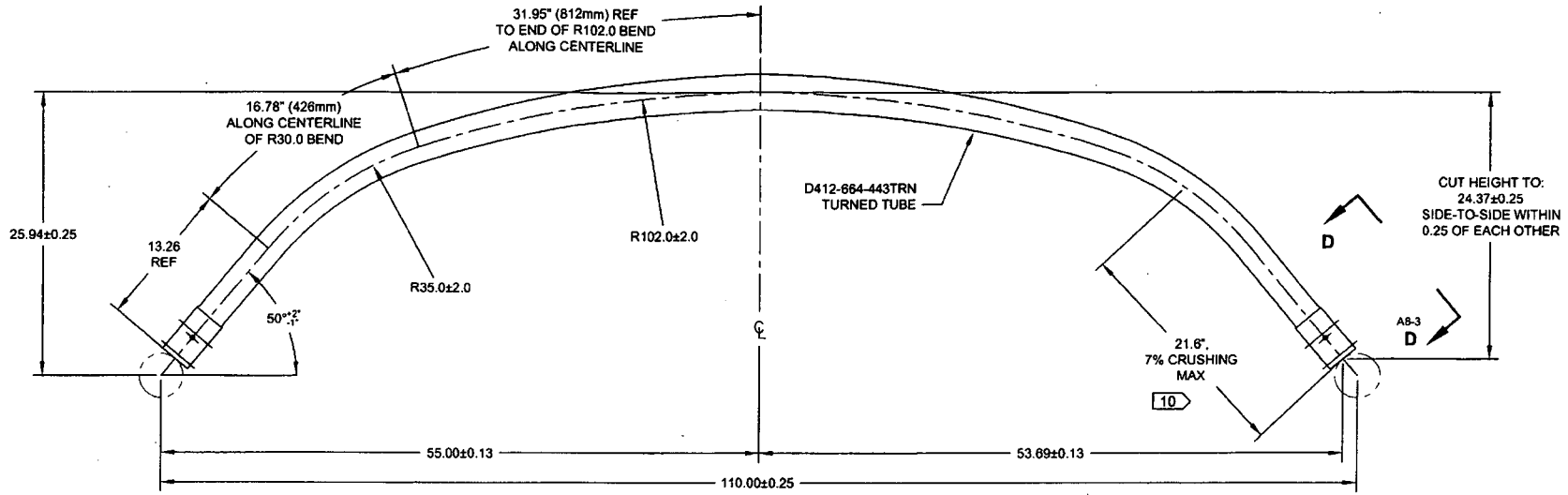
SECTION B-B D4-2
SCALE 4X



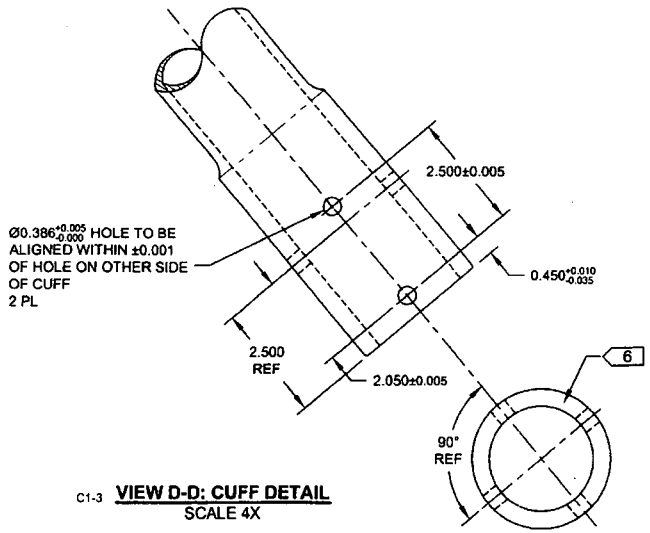
SECTION A-A C6-2
SCALE 4X

RELEASED
2014 -05- 26

DESIGN		**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA
DRAWN		
CHECKED		DRAWING NO. D412-664-443 REV. A SHEET 2 OF 4
MFG. APPR.		
APPROVED		TITLE CROSSTUBE ASSY (412 HI AFT) SCALE NTS
DE APPR.		
DATE 14.04.01		



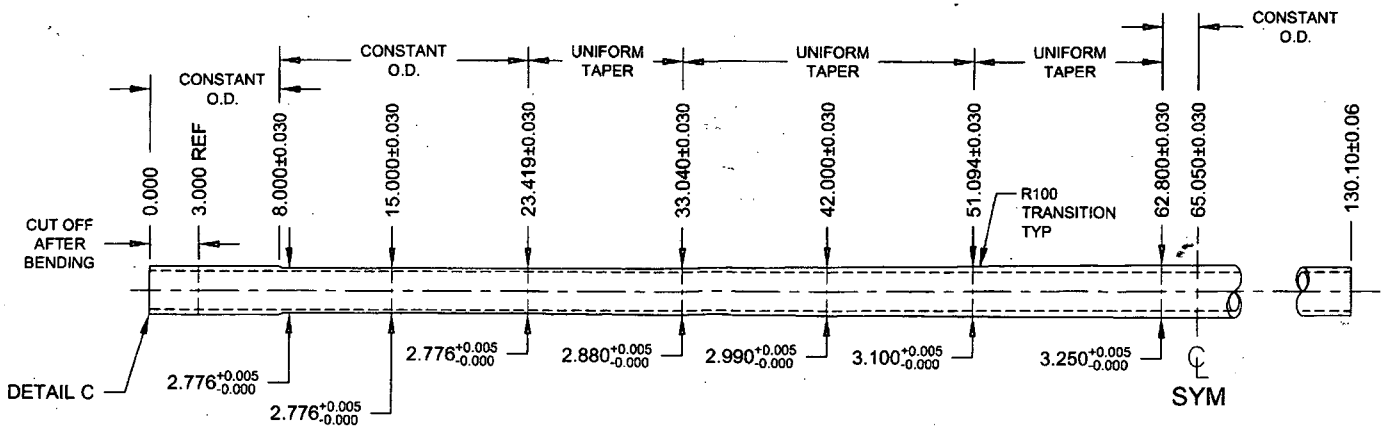
D412-664-443BND 10
BENDING DETAIL



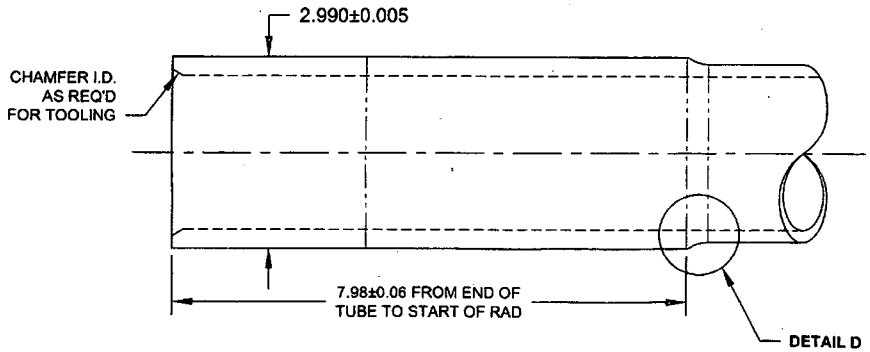
C1-3 **VIEW D-D: CUFF DETAIL**
SCALE 4X

RELEASED
2014 -05- 26

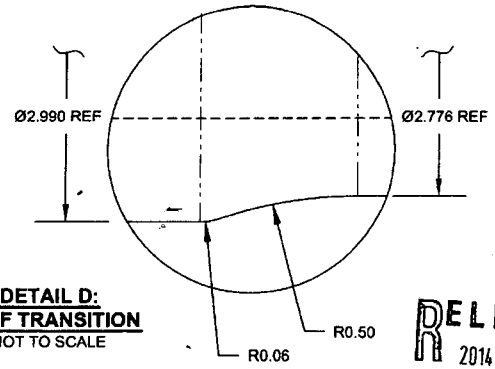
DESIGN		**DART AEROSPACE LTD**	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D412-664-443	SHEET 3 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASSY (412 HI AFT)	NTS
DATE	14.04.01		



D412-664-443TRN
TURNING DETAIL



DETAIL C:
CUFF TRANSITION
SCALE 4X



DETAIL D:
CUFF TRANSITION
NOT TO SCALE

RELEASED
2014 -05- 26

DESIGN		**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA
DRAWN		
CHECKED		DRAWING NO. D412-664-443 REV. A SHEET 4 OF 4
MFG. APPR.		
APPROVED		TITLE CROSSTUBE ASSEMBLY (412 HI AFT) SCALE NTS
DE APPR.		
DATE 14.04.01		